## virtual au pair

GR.6 Maths

## term 3 ATP 2025

topics

- length
- 2D shapes
- 3D figures
- transformasions en symmetry
- perimeter, area and volume

Time To Study

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question 1 : length

1.1) Complete the table.

Cm	m	km
123 400	12 340	12,34
55 500	5 550	5,55
12 000	120	0,12
2400	×100 ← 240 → ÷100	0,24
250025	2 500 $\frac{1}{4}$ 2500,25	2,50025

1.2) Answer the following questions. → remember unit

a) How many meters are there in 12,5km ? 12 500 m

b) How many cm are there in 60$\frac{1}{2}$m ? 6000 + 50 = 6050 cm

c) How many km are there in 3550m ? 3,55 km

d) How many mm are there in 3250cm ? ×10 32 500 mm

e) How many cm are there in 650mm ? ÷10 65 cm

f) How many meters are there in 12$\frac{3}{4}$ km ? 12 750 m

g) How many cm are there in $\frac{1}{2}$m ? 50 cm

1.3) Conversion

a) 32 560m = 32 km and 560 m

b) 7 250cm = 72 m and 50 cm

c) 895mm = 89 cm and 5 mm

d) 22.65km = 2 650 m

1

e) 5,25m = _____525_____ cm

f) 3,85km = __3850__ _____ m

g) 45,5cm = ___455_____ mm

h) $11\frac{1}{2}$ km = __11 500_____ m
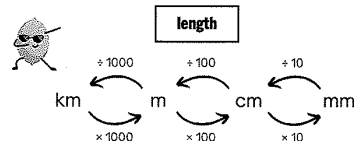
i) $25\frac{1}{4}$ m = __2525_____ cm

j) $\frac{3}{4}$ km = _____750_____ m

k) 2500m = __2,5_____ km

l) 590cm = __5,9__ m

m) 9600m = __9,6__ km

1.4) Complete the following:

12600cm + 900cm = 13500cm

a) 750 cm × 18 = __135_____ m

b) 2,500,000 cm ÷ 50 = __500__ m = __50 000__ cm write the answer first

c) 3.5 km − 3 184 m = __3500__ m − 3 184 m = __316__ m

d) 318 m + 496 m + 45600 cm = __1270__ m = __1,27__ km

1.5) Arrange the length from shortest to longest.

a) 7,72 km; 7,27 km; 7 702 m: __7,27 km__ ; __7702 km__ ; __7,72 km__

1.6) You have 21 350 cm , how many meters do you need to have 500m in total?

____500 − 213,5 = 286,5m____

1.7) If one lap around the school is 850m, how many km will you jog if you jog around the school 12 times?

____850 × 12____   10200 m = 10,2 km

= (800 × 12) + (50 × 12)

= 9600 + 600

= 10200

1.8) The carpet's dimensions are 1770 cm by 3560cm . What will the dimensions in meters be ?

____17,7 m   by   35,6 m____

1.9) Mias rides his bike to his friend's house every day. He drives 840m there. How many km will Mias drive in a school week if he drives to his friend and back every day?

= 5 × 2 × 840 m

= 10 × 840 m

= 8400 m

= 8,4 km

1.10) Mom has a vegetable garden. The length is 620cm and the width is 395cm

She wants to put fence around the vegetable garden, but the wire is purchased by the meter. She also wants to keep space for an 80cm gate. How many meters of wire is she going to need?

perimeter : (2 × 620) + (2 × 395)

= (1200 + 40) + (600 + 180 + 10)

= 1240 + 790

= 2030 cm

2030 cm − 80 cm = 1950 cm ∴ 1950 cm = 19,5cm wire

1.11) Johan must buy 65,55m of wire for his sheep pen at R62 per metre. What is the wire going to cost him?

6555 ×   65,55 × 62 = R4064,1
62
3 9 3 3 0 0
1 3 1 1 0
4 0 6 4 1 0

1.12) Marna trots $\frac{3}{5}$ of 4km with her horse. How far did she trot with him?

$\frac{3}{5}$ × $\frac{4000}{1}$

= (4000 ÷ 5) × 3

= 2400 m

= 2,4 km.

1.13) Liam has to dig $\frac{2}{6}$ of a 3km ditch. How far is he going to have to dig?

$\frac{2}{6} \times 3000$ m

$= (3000 \div 6) \times 2$

$= 1000$

$= 1$ km

1.14) Five ropes individually measure 12,35m ; 6540cm; 250cm; 325cm ; 1,25m

How long are all five ropes collectively in meters?

12,35 m + 65,4 m + 2,5 m + 3,25 m + 3,25m + 1,25m

$= 84,75$ m
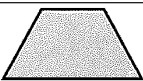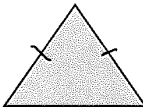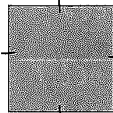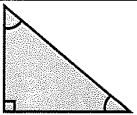
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12,35
65,40
 2,50
 1,25
 3,25
84,75
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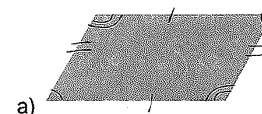
question 2 : 2D and 3D

2.1) Complete the table

shape	name	number of straight sides	number of curved sides	angles (also type)
trapezium shape	Trapezium	4	0	2 acute angles 2 obtuse angles
isosceles triangle shape	isosceles triangle	3	0	3 acute angles
square shape	Square	4	0	4 right angles
right triangle shape	right iso eles triangle	3	0	1 right angle 2 acute angles

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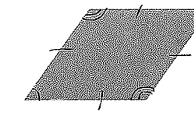
2.2) Label the shape and also describe the characteristics indicated.

a)

Parallelogram
- 2 pairs of opposite sides of equal length
- 2 pairs of opposite angles equal

b)
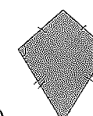
Rhombus
- 2 pairs opp. sides parallel
- all 4 sides equal length
- 2 pairs opp. angles equal

(c)

Square
- 4 sides equal length
- 4 right angle.

(d)

Kite
- 2 pairs adjacent sides equal
- one pair opp. angles equal

(e)

Trapezium
- one pair opp. sides parallel

(f)

Rectangle
- 2 pairs opposite sides equal length
- 2 pairs opp. sides parallel
- 4 angles equal; right angles

2.3) Name two similarities between a rectangle and a parallelogram.

- Both have 2 pairs opposite sides ~of~ equal length

- Both have 2 pairs opposite sides ~of~ equal length

2.4) Discuss one difference between a rhombus and a square.
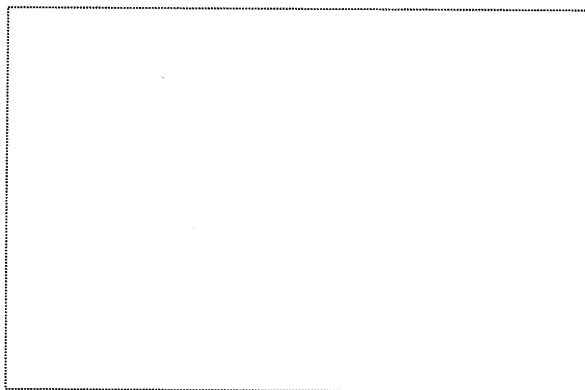
Kite has two pairs of opposite angles are equal and a square has all four angles equal.

2.5) Are the following statements true or false?

a) A circle is a polygon. ___false___

b) A right angle is a half rotation . ___false___

c) A parallelogram is also a rectangle . ___false___

d) A rectangle is also a parallelogram. ___true___

e) A triangle can have two obtuse angles. ___false___

2.6) Name three quadrilaterals that have two acute interior angles and two obtuse interior angles. ___Kite , parallelogram , trapezium.___

2.7) Draw a circle with a diameter of 5cm in the block below.

diameter has to
be 2,5 cm ^cm^ compass

- draw with pencil

**Quess I'm
sticking around**

2.8) What is the difference between a circle and an oval ?

Circle has a constant radius and an oval has an irregular radius.
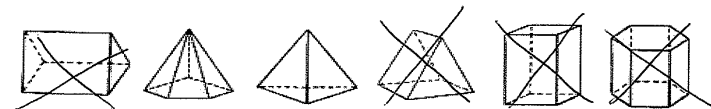
2.9) Give the Mathematical names for the following:

a polygon with 5 straight sides	pentagon
a polygon with 6 straight sides	hexagon
a polygon with 7 straight sides	heptagon
a polygon with 8 straight sides	octagon
a polygon with 9 straight sides	nonagon
a polygon with 10 straight sides	decagon

2.10) Give the definition for each of the following.

(a) polygon: ___Closed 2D shape with only straight sides.___

b) regular polygon: ___Polygon with all sides the same length___

(c) three-dimensional figure: ___Figure with three dimensions : length width and height.___

e) a reflex angle : ___An angle greater than 180° and less than 360°___

f) irregular pentagon: ___A pentagon with 5 sides not the same length / not of equal length.___
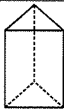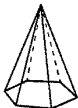
2.11) Mark all the prisms with a cross.
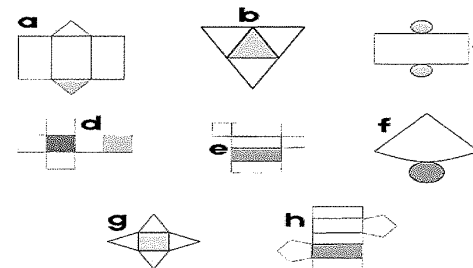
2.12) Explain the difference between a pyramid and a prism.

Pyramid has two identical bases ; Pyramid has one base Prism bases are connected by rectangles ; Pyramid base is connected to triangles that meet at one vertice

2.13) Label each figure and complete the table. Give total flat planes, what is the base and what type of flat planes.

figure	name	name the base and the other flat planes	vertices	edges
	Rectangular prism	2 rectangles (base) 4 rectangles	8	12
	Cube	6 squares (base)	8	12
	Pentagonal prism	2 pentagons (base) 5 rectangles	10	15
	Triangular prism	2 triangles (base) 3 rectangles	6	9
	Hexagonal pyramids	1 hexagon (base) 6 triangles	7	12
	Cone	1 circle (base) 1 rounded shape	1	1
	Triangular pyramid	1 triangle (base) 3 triangles	4	6

2.14) Identify the 3D figure represented by each net.

a) Triangular prism _____ b) Triangular pyramid _____

(c) Cylinder _____ (d) Cube _____

(e) Rectangular prism _____ (f) Cone _____

(g) Square pyramid _____ h) Pentagonal prism _____

2.15) Complete the table

Figures	differences	similarities
A and B	A: base connected by rectangles B: base connected by △	both have triangles as base
B and G	B: base is a triangle G: base is a square	both are pyramid

2.16) What is the difference and similarity between a rectangular prism and a cube?

Difference: prism has 6 rectangles and a cube has 6 squares.
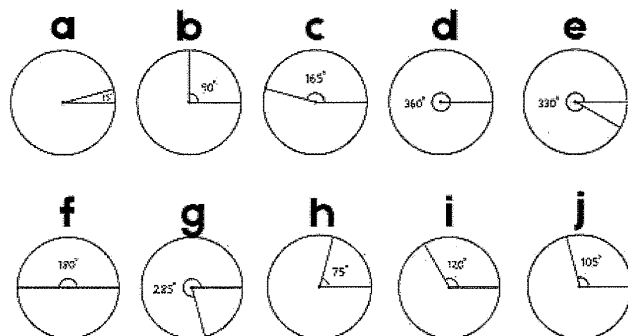
Similarity: both have 6 flat surfaces, 8 vertices and 12 edges.

2.17) What would you call a figure made up of two heptagons and seven rectangles?

Heptagonal prism

2.18) **Label each kind of angle according to the size.**

a   b   c   d   e

f   g   h   i   j

a) _____acute angle_____   b) _____right angle_____

(c) _____obtuse angle_____   (d) _____full rotation_____

(e) _____reflex angle_____   (f) _____straight angle_____

(g) _____reflex angle_____   h) _____acute angle_____

(i) _____obtuse angle_____   (j) _____obtuse angle._____

2.19) What is a triangle that has one right angle called? _right-angled triangle._

2.20) What is a triangle called that has one obtuse angle?_obtuse triangle_

2.21) **Complete the following.**
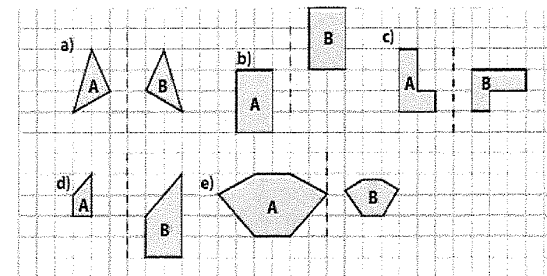
a) The only three-dimensional object with one vertex is a _pyramid._

b) The only three-dimensional object of which all the planes are square is a

cube.

b) A tetrahedron is a _triangular_ pyramid.

c) A tetrahedron has_6_ sides, _4_ faces, and _4_ apexes.

d) Each plane of a tetrahedron has a maximum of _3_ lines of symmetry. The order of symmetry of each plane of a tetrahedron is at most _4_

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question 3 : transformations

3.1) Label the transformations:

✱ a) _reflection_

b) _translation_

c) _rotation_

d) _enlargement_

e) _reduction._

3.2) What transformation will have a mirror image as result? _reflection_

3.3) If the length of a triangle's sides is 3; 4 and 2 and after the transformation it is 9; 12 and 6. By what scale factor was the triangle enlarged?

$$\frac{9}{3} : \frac{12}{4} : \frac{6}{2} \rightarrow 3 : 3 : 3 \quad factor : 3$$
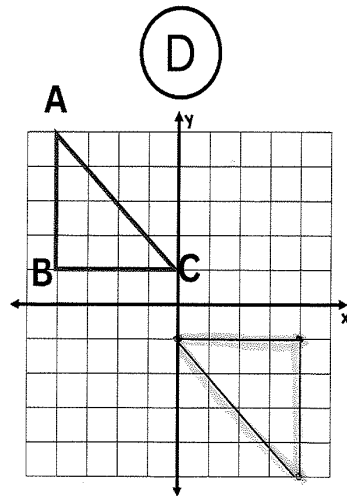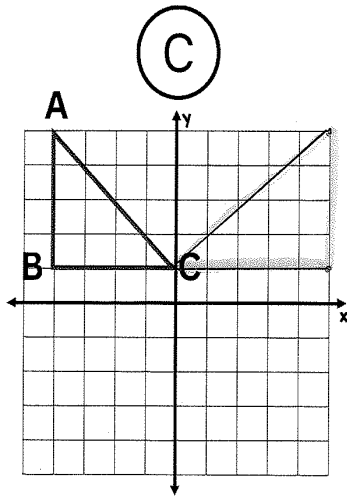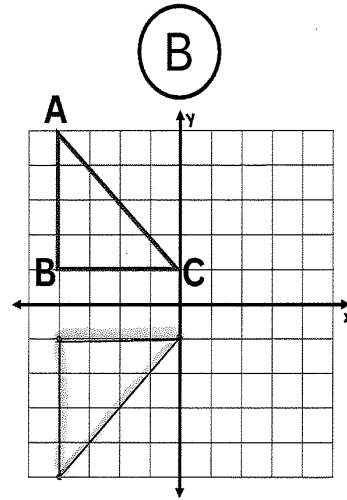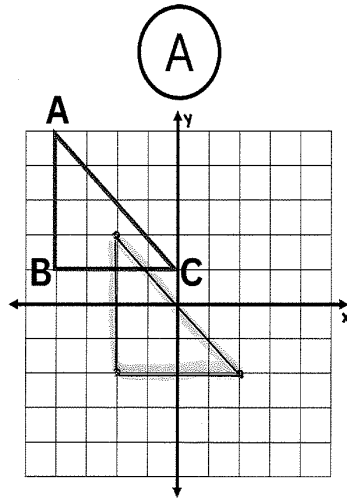
3.4) What transformations occur when a shape has a mirror image and moves downwards? _reflection and translation._

3.5) **Look at the graphs on the next page and do the following: Draw the new triangle on the graph.**

a) Graph A : Translate the triangle by two places to the right and three places down.

b) Graph B : Draw the reflection to the bottom

c) Graph C : Reflect to the right

d)Graph D : Rotate the triangle 180°

Dont' let this blow your mind.

A

B

C

D

3.6) On the chart paper at the bottom, follow the following instructions.

a) Write the coordinates of each vertex in the table. The axis counts in 1 cm's .

b) Increase quadrilateral ABCD by a factor of 3 – write the new coordinates in the table.

c) Decrease triangle ABC by factor 2 – write the new coordinates in the table.
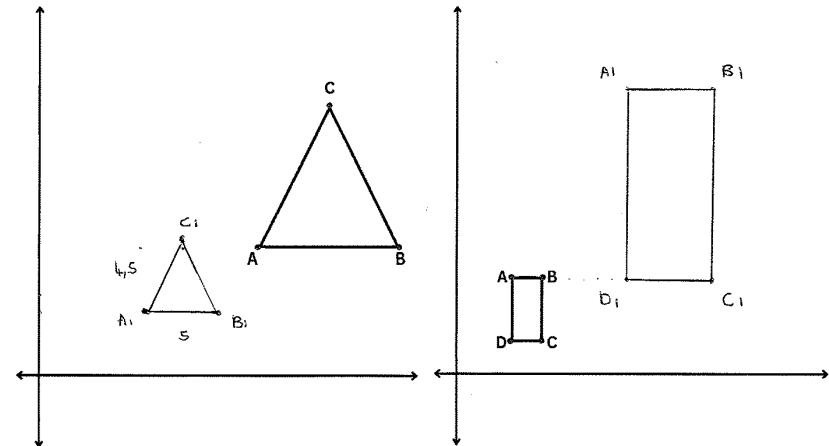
Form	Quadrilateral				Triangle		
before transformation	A $(4; 6)$	B $(6; 6)$	C $(6; 2)$	D $(4; 2)$	A $(15; 8)$	B $(25; 8)$	C $(20; 17)$
after transformation	A' $(12; 8)$	B' $(18; 18)$	C' $(18; 6)$	D' $(12; 6)$	A' $(7,5; 4)$	B' $(12,5; 4)$	C' $(10; 8,5)$

d) Record the two new shapes on the graphs.

e) Compare the area of quadrilateral ABCD before and after the transformation.

Area : ABCD   Area of A'B'C'D'
= L x W   = L x W
= 2 x 4   = 12 x 6
= 8 squares   = 72   squares

f) Compare the side lengths of the triangle before and after the transformation.

Side lengths triangle ABC : 10 ; 9 ; 9
Side lengths triangle A'B'C' : 5 ; 4,5 ; 4,5

question 4 : symmetry

4.1 Which 2D shape has many lines of symmetry ?

Circle

4.2 How many lines of symmetry will a square have?

_4_
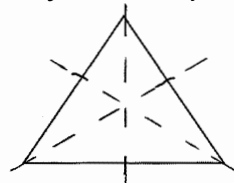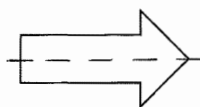
4.3 Which of the following has no line of symmetry ?
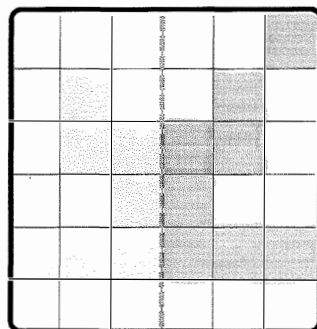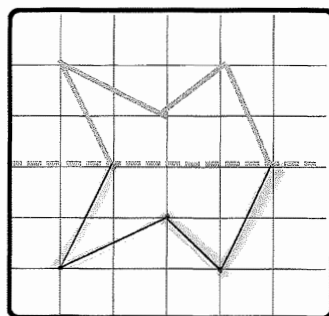
| isosceles trapezoid	parallelogram	rectangle

4.4) Draw the lines of symmetry for each shape.

4.5) Complete the mirror images.
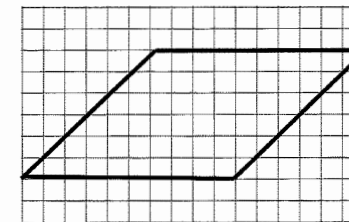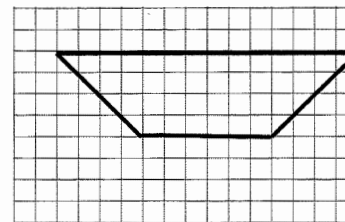
4.6) Complete the table.

shape	equilateral triangle	kite	rhombus	circle	irregular quadrilateral
Order of rotational symmetry	4	1	2	4	0

Order of rotation symmetry : In a 360 degree rotation - in other words the 4 turns that the shape makes when it rotates, how many times will it be in the exact same position again to fit into the original shape?

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question 5 : circumference, area and volume

5.1) Determine the circumference and area – assume each block line is equal to 10mm.

Circumference: 40 + 40 + 60 + 140 = 280mm   circumference: 60 + 60 + 100 + 100 = 320mm

area: 4000mm^2 area: 6000mm^2

5.2) Now classify shapes A and B.
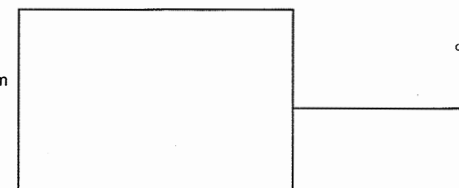
A: _Isosceles trapezoid._   B: _Parallelogram_

5.3) Determine the perimeter and area of the following:

A

18cm

6cm

24cm

Why are area and perimeter such good friends?
They are the same shape,
one covers it up, while the other keeps it in line! ☺

Perimeter: 24 + 6 + 10 + 12 + 14 + 18 = 84 cm

Area: (L × W) + (L × W)
    = (14 × 18) + (6 × 10)
    = 252 + 60 = 312 cm^2

5.4) A rectangular prism has a base of 12m by 9m and is 5m high. What is the volume of the prism in cm ?

12 m = 1200 cm   9m = 900 cm   5m = 500 cm

Volume = 1200 × 900 × 500
       540 000 000 cm^3
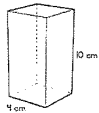
5.5) What would be the circumference of an equilateral triangle with one side 55mm?

Circumference: 5 + 5 + 5 = 55 + 55 + 55 = 165 mm
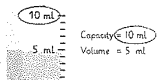
What would be the circumference of a regular hexagon with a side length of 6m?

Circumference: 6 x 6m = 36 m

5.6) Determine the volume of the container. If 40% of the volume is tapped then, what will remain? The prism has a square as its base.

Volume → space inside a 3D shape (what is inside ?)
Capacity → how much a container can hold
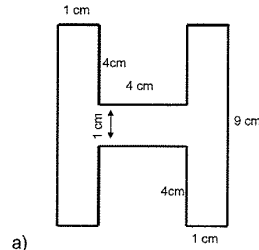
10 ml
Capacity = 10 ml
5 ml
Volume = 5 ml

Volume = L x W x H $\frac{40}{100}$ x $\frac{160}{1}$

= 4 x 4 x 10   = 4 x 16   160 - 64

= 16 x 10   = 64 cm³   = 96 cm³   left.

= 160 cm³
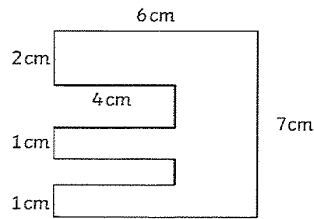
5.7) Determine the perimeter of the composite shapes.

a)
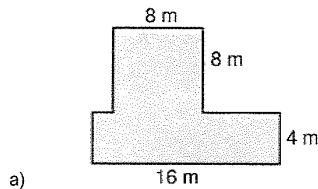
Perimeter: 9 + 1 + 4 + 4 + 4 + 1 + 9

+ 1 + 4 + 4 + 4 + 1

= 46 cm

b)
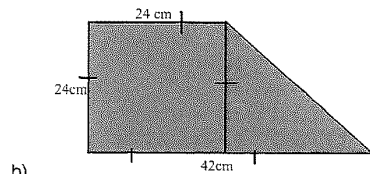
Perimeter: 6 + 7 + 6 + 1 + 4 + 1 + 4

+ 1 + 4 + 2 + 4 + 2

= 42 cm

5.8) Calculate the area of the composite shapes.
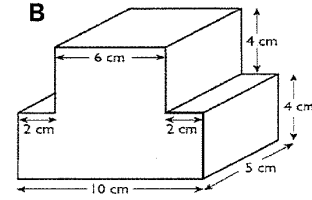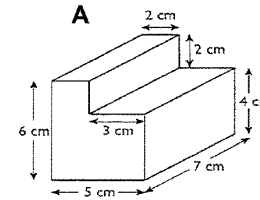
a)

8 m
8 m
4 m
16 m

b)

24 cm
24cm
42cm

Area: (L x W) + (L x W)   Area: (L x B) + $\frac{1}{2}$ L x B

= (8 x 8) + (16 x 4)   = (24 x 24) + $\frac{1}{2}$ (24 x 24)

= 64 + 64   = 876 + 288

= 128 m²   = 864 cm²
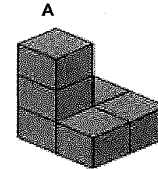
5.9) Calculate the volume of the figures.
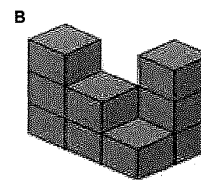
A
2 cm
2 cm
6 cm
3 cm
4 cm
5 cm
7 cm

B
4 cm
6 cm
2 cm
2 cm
4 cm
10 cm
5 cm

Volume: (L x W x H) + (L x W x H)   Volume: (L x W x H) + (L x W x H)

= (2 x 2 x 7) + (5 x 7 x 4)   = (10 x 5 x 4) + (6 x 5 x 4)

= 28 + 140   = 200 + 120

= 168 cm³   = 320 cm³
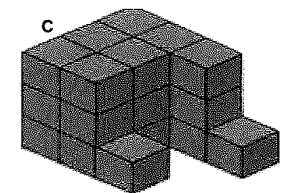
5.10) Assume each side length is 1cm. What is the volume of each of the following?

A   B   C
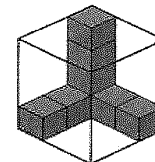
6cm³   9cm³   23 cm³

5.11) What is the volume and capacity of the figure below ?

Volume : 8 cm³
Capacity : 3 x 3 x 4
= 36 cm³